

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claim 1 (Canceled)

Claim 2 (Canceled)

Claim 3 (Previously Presented) The LCD device according to Claim 7, wherein said alignment film layer of inorganic or organic material is diamond-like carbon.

Claims 4-5 (Canceled)

Claim 6 (Currently Amended) The LCD device according to Claim 7, wherein a surface anchoring energy is increased as compared to LC material deposited between flat substrate surfaces due to an increased surface area in contact with the LC material.

Claim 7 (Currently Amended) A liquid crystal display (LCD) device comprising:

a first substrate having a grooved surface profile;

a first alignment film layer of inorganic or organic material formed on said grooved surface of said first substrate and having said grooved surface profile, said first alignment film of inorganic or organic material having 90° meta-stable alignment states

eliminated at the surface of said alignment film layer and having an increased alignment force for constraining deposited LC material to an alignment direction parallel to the grooves due to enhanced topographic un-symmetry so that alignment other than along the grooved surface profile is energetically unfavorable; and

a second substrate having a flat surface profile and a second alignment film layer formed thereon, said second substrate aligned opposite said first substrate for forming a plurality of LCD cells having said liquid crystal (LC) material deposited therein, said LC molecules aligning parallel to the alignment direction of said alignment film layer formed on said grooved surface of said first substrate, wherein aligning the LC molecules parallel to the grooves enables decreased potential energy of said LC ~~molecules~~ material.

Claim 8 (Previously Presented) The LCD device according to Claim 7, wherein said first and second alignment film comprises one selected from the group comprising: SiN_x, hydrogenated amorphous silicon, SiC, SiO₂, glass, Al₂O₃, CeO₂, SnO₂, ZnTiO₂, and InTiO₂, InZnO₂, and other organic or inorganic dielectric film and conducting films.

Claim 9 (Currently Amended) The LCD device according to Claim 7, wherein said grooved surface profile of said alignment film is ~~sinusoidal~~ grooved in a single direction only.

Claim 10 (Previously Presented) The LCD device according to Claim 7, wherein said grooves are not continuous along a lengthwise direction.

Claim 11 (Original) The LCD device according to Claim 10, wherein the grooves are terminated in a length direction and restart in a slightly different location lengthwise with different height and width of said grooves.

Claims 12-17 (Canceled)

Claim 18 (Previously Presented) The LCD device according to Claim 7, wherein said alignment film formed on said first substrate having said grooved surface profile is subjected to an incident ion beam in a direction parallel to a grooving direction to avoid weak anchoring and 90 degree meta-stable states in liquid crystal (LC) material resulting in said increased alignment force.

Claim 19 (New) A liquid crystal display (LCD) device comprising:

- a first substrate having a grooved surface profile;

- a first alignment film layer of inorganic or organic material formed on said grooved surface of said first substrate and having said grooved surface profile, said first alignment film of inorganic or organic material having 90° meta-stable alignment states eliminated at the surface of said alignment film layer; and

- a second substrate having a flat surface profile and a second alignment film layer formed thereon, said second substrate aligned opposite said first substrate for forming a plurality of LCD cells having a liquid crystal (LC) material deposited therein, said LC material aligning parallel to the alignment direction of said alignment film layer formed on said grooved surface of said first substrate.